NORTHEAST ELECTRONICS

A DIVISION OF NORTHERN TELECOM, INC.

INSTRUCTION MANUAL

TTS 26BXA

BATTERY & GROUND PULSING ADAPTOR

No. A0026-69-600 ISSUE 1 DATE FEB 1977

PRINTED IN U.S.A.

Airport Rd., Concord, N.H. 03301 • (603) 224-6511 • TELEX 94-3453

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MODEL TTS 26BXA

BATTERY AND GROUND PULSING ADAPTOR

1.1 GENERAL DESCRIPTION

1.2 The TTS 26BXA battery and ground pulsing adaptor is one of several accessory units designed to extend the versatility and application coverage of a Northeast Electronics TTS 26B Pulse Signaling Test Set.

1.3 The adaptor mounts in the accessory cover (lid) of the test set. The adaptor receives pulse signaling from the test set and converts it into output pulsing which is normally: (a) battery-open on the tip, and (b) ground-open on the ring.

NOTE

These output conditions constitute a form of wet loop pulsing in which **both sides** of the loop are simultaneously opened (break = on hook) and closed (make = off hook).

1.4 The adaptor has a switch which allows the polarity of the output conditions to be reversed. That is, the output pulsing can be switched to: (a) ground-open on the tip, and (b) battery-open on the ring.

1.5 The adaptor also permits switch selection of seven balanced loop resistance values which can be inserted in series with the circuit under test.

2.1 SPECIFICATIONS

2.2 Table 1 lists the specifications of the TTS 26BXA.

3.1 INSTALLATION

3.2 The 26BXA adaptor is mounted on a single panel which is 4-3/8 inches (11.1 cm) wide and 8-7/8 inches (22.5 cm) high. It is designed to fit in the center of the accessory cover (lid) available for the TTS 26B pulse signaling test set.

3.3 When purchased with the basic test set, the 26BXA adaptor is factory-mounted in the accessory cover. When purchased as an add-on to an existing test set with an existing accessory cover, the 26BXA adaptor must be installed in the cover in the field. The 26BXA adaptor requires that two wires be connected within the cover as shown in Figure 1. (Figure 1 also includes wiring data for additional accessories.) The mounting procedure is easy, requiring use of only four retaining screws to fasten the 26BXA adaptor into the cover.

4.1 OPERATION

4.2 TEST CONNECTIONS

4.3 In normal use, the 26BXA adaptor converts the pulsing received at the TO 26B SEND B + G jack (from the TTS 26B pulse signaling test set) into battery-open and ground-open pulsing appearing simultaneously at the adaptor's OUTPUT jack. Balanced loop resistance of 300, 420, 600, 720, 900, 1010, and 1320 ohms may be inserted in series with the circuit under test.

4.4 The adaptor is made ready for use by patching the test set's SEND B + G jack to the TO 26B SEND B + G jack on the adaptor and then connecting the adaptor OUTPUT jack to the circuit under test. The adaptor is powered by connecting the accessory cover connector to the EXTERNAL ADAPTER jack on the TTS 26B test set.

4.5 CONTROLS AND JACKS

4.6 Controls and jacks on the 26BXA adaptor are shown in Figure 2 and described in Table 2.

4.7 OPERATING INSTRUCTIONS

4.8 Pulsing Via The Adaptor

4.9 To send pulses via the TTS 26BXA adaptor, perform the following steps.

1. Connect the accessory cover connector to the EXTERNAL ADAPTER jack on the TTS 26B test set.

2. Make the connections shown in Figure 3.

3. Set up the TTS 26B test set to transmit at the desired pulse rate and percent break. (Nominal operating range of adaptor is 6 to 14 pulses per second at 40 to 70 percent break.) The test set SEND switch should be at E + M LINE E = G + O, M = B + G.

4. On the adaptor, select the appropriate pulsing polarity and insert the required loop resistance.

5. The adaptor is now ready for use.

4.10 **Using TTS 26B Test Set To Measure Battery-Ground Pulsing Transmitted By The TTS 26BXA Adaptor**

4.11 Table 3 summarizes the test set switch positions used to measure pulsing from the adaptor. Refer to TTS 26B pulse signaling test set manual for more detailed instructions.

5.1 **THEORY OF OPERATION**

5.2 Refer to Figure 6, the schematic diagram of the TTS 26BXA adaptor. Relay K1 follows input pulses (battery and ground) arriving at the TO 26B SEND B+G jack. Pulsing speed and percent break are controlled by the TTS 26B test set.

5.3 One pair of normally open contacts on K1 apply battery and open pulses to the tip lead on the adaptor's OUTPUT jack. Another pair of normally open contacts on K1 apply ground and open pulses to the ring lead on the adaptor's OUTPUT jack. The polarity of the pulses can be changed by toggle switch S8. RESISTANCE switches S1-S7 insert precision high wattage resistors in series with the OUTPUT jack's tip and ring leads. Refer to Table 4.

6.1 **MAINTENANCE**

6.2 The TTS 26BXA adaptor contains only switches and passive components. It requires no special maintenance or calibration.

6.3 The only preventive maintenance needed is reasonable care to keep connector contacts from being contaminated by foreign material. Cleaning or burnishing of contacts may be done as needed, use standard practices.

7.1 **DRAWINGS**

7.2 Figures 4 and 5 are parts location diagrams for the TTS 26BXA adaptor. Figure 6 is the schematic diagram.

8.1 **PARTS LISTS**

8.2 Tables 5 and 6 are parts lists for the TTS 26BXA adaptor.

Table 1. TTS 26BXA Specifications.

Output pulsing on ground side of OUTPUT jack:	±4% of input percent break
Output pulsing on battery side of OUTPUT jack:	±4% of input percent break
Loop resistances selectable:	150, 210, 300, 360, 450, 510, 660 each on tip and ring
Loop resistance accuracy:	±1% on both the tip and ring at the OUTPUT jack
Maximum loop current:	0.5 A inductive
Minimum input current to relay coil:	50 mA

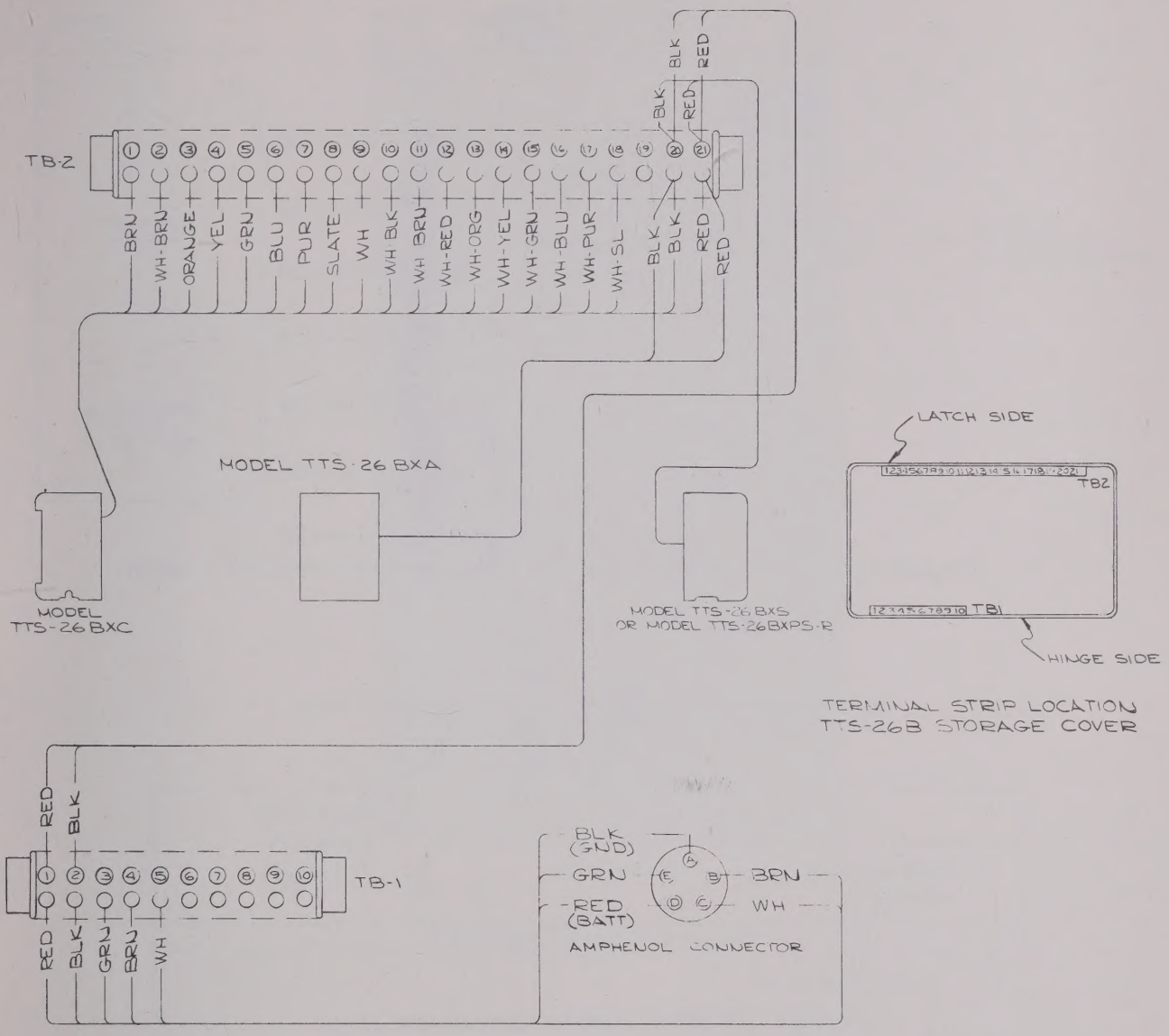


Figure 1. Installation Diagram.

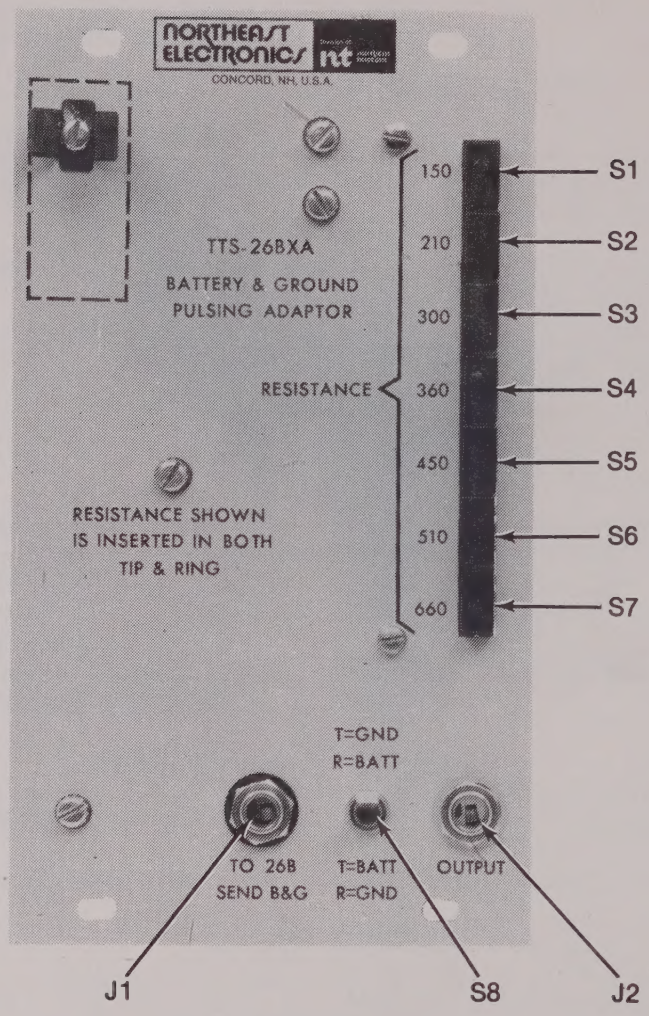


Figure 2. Controls and Jacks.

Table 2. TTS 26BXA Adaptor Controls and Jacks.

REFERENCE DESIGNATION	NOMENCLATURE	DESCRIPTION
J1	TO 26B SEND B+G 310 jack	Provides connections to TTS 26B pulse signaling test set.
J2	OUTPUT 310 jack	Provides tip and ring connections to a circuit under test.
S1-S7	RESISTANCE interlocked pushbutton switches	Inserts selected values of balanced loop resistance. Total resistance inserted is twice the selected value. Refer to Table 3.
S8	toggle switch	Determines pulsing polarity present at the OUTPUT jack.

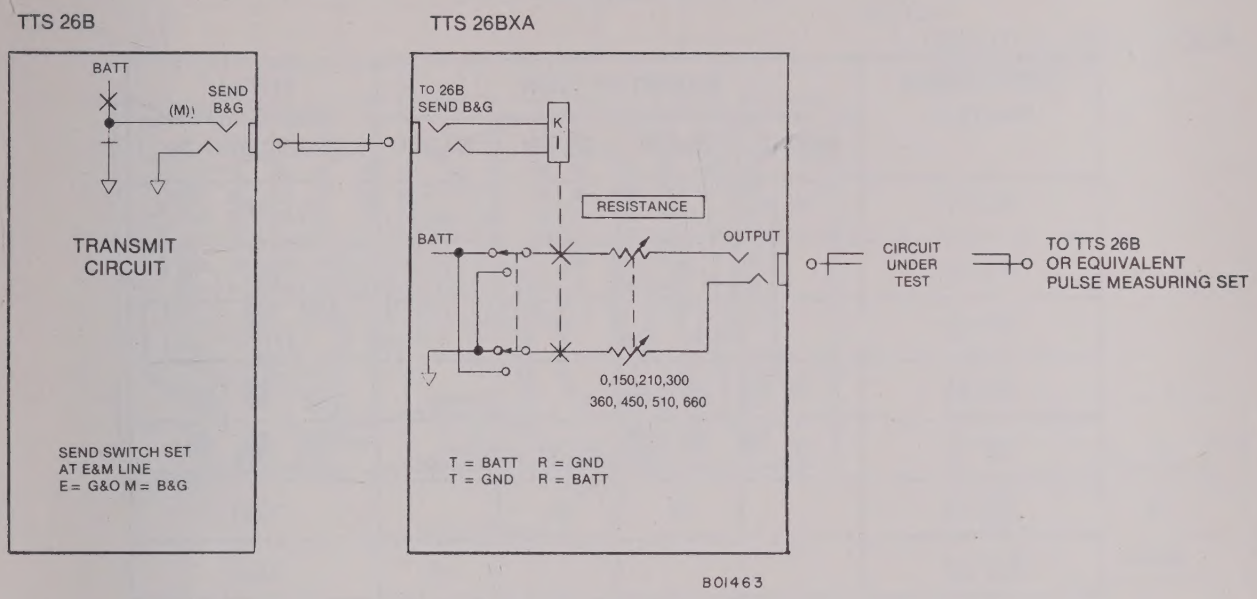


Figure 3. TTS 26BXA Battery and Ground Pulsing Adaptor Functional Diagram.

Table 3. Test Set Switch Positions To Measure Pulsing From TTS 26BXA Adaptor.

ADAPTOR PULSING POLARITY	TEST SET	
	INPUT JACK	RECEIVE SWITCH POSITION
T = GND R = BATT	REC E+M.	G+O (E) to measure tip lead pulsing B+O (M) to measure ring lead pulsing
T = BATT R = GND	REC LOOP	B+G ON LOOP
METER CIRCUIT switch on test set should be set at % BREAK THRU METER RELAY.		

Table 4. Switch Resistance.

RESISTANCE SWITCH	RESISTOR PAIR				TOTAL RESISTANCE SWITCHED-IN
	R1/R5	R2/R6	R3/R7	R4/R8	
150 S1	IN				300
210 S2		IN			420
300 S3			IN		600
360 S4	IN	IN			720
450 S5	IN		IN		900
510 S6		IN	IN		1020
660 S7				IN	1320

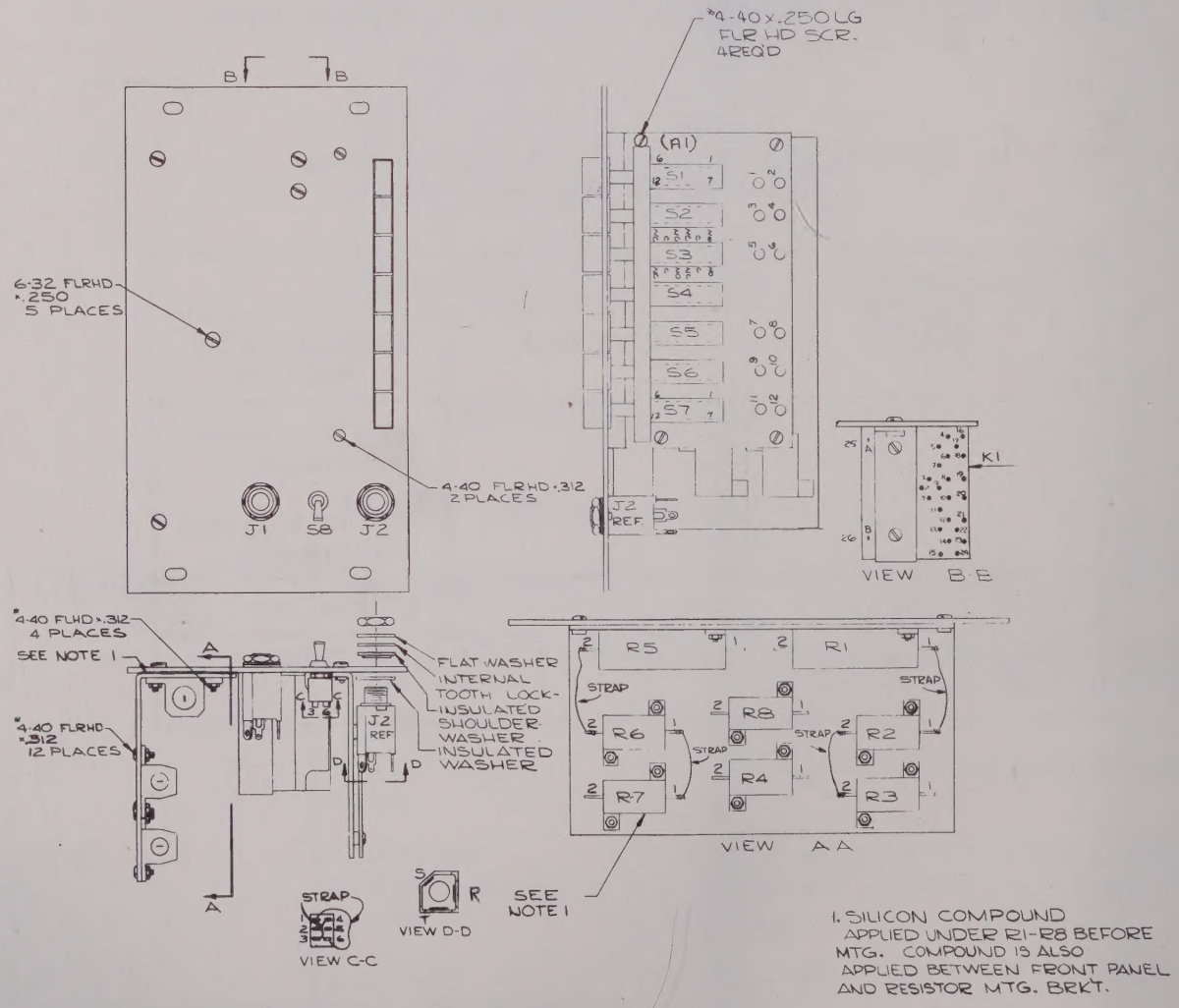
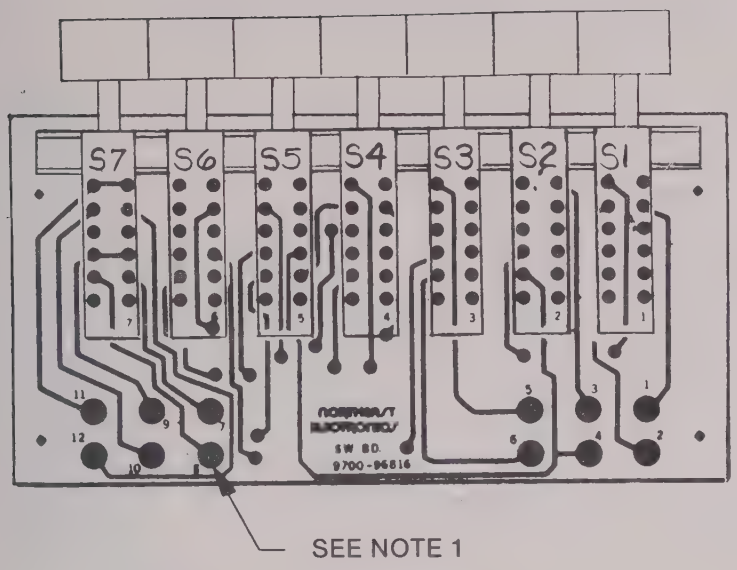


Figure 4. TTS 26BXA Battery and Ground Pulsing Adaptor Assembly.



NOTES:
1. DENOTES LARGE QUICK DISCONNECT.

SWITCH ASSY	
NE PART NO.	B0026-69-012
REF DESIG	A1
PC NO.	96816

Figure 5. Switch Assembly Parts Location Diagram.

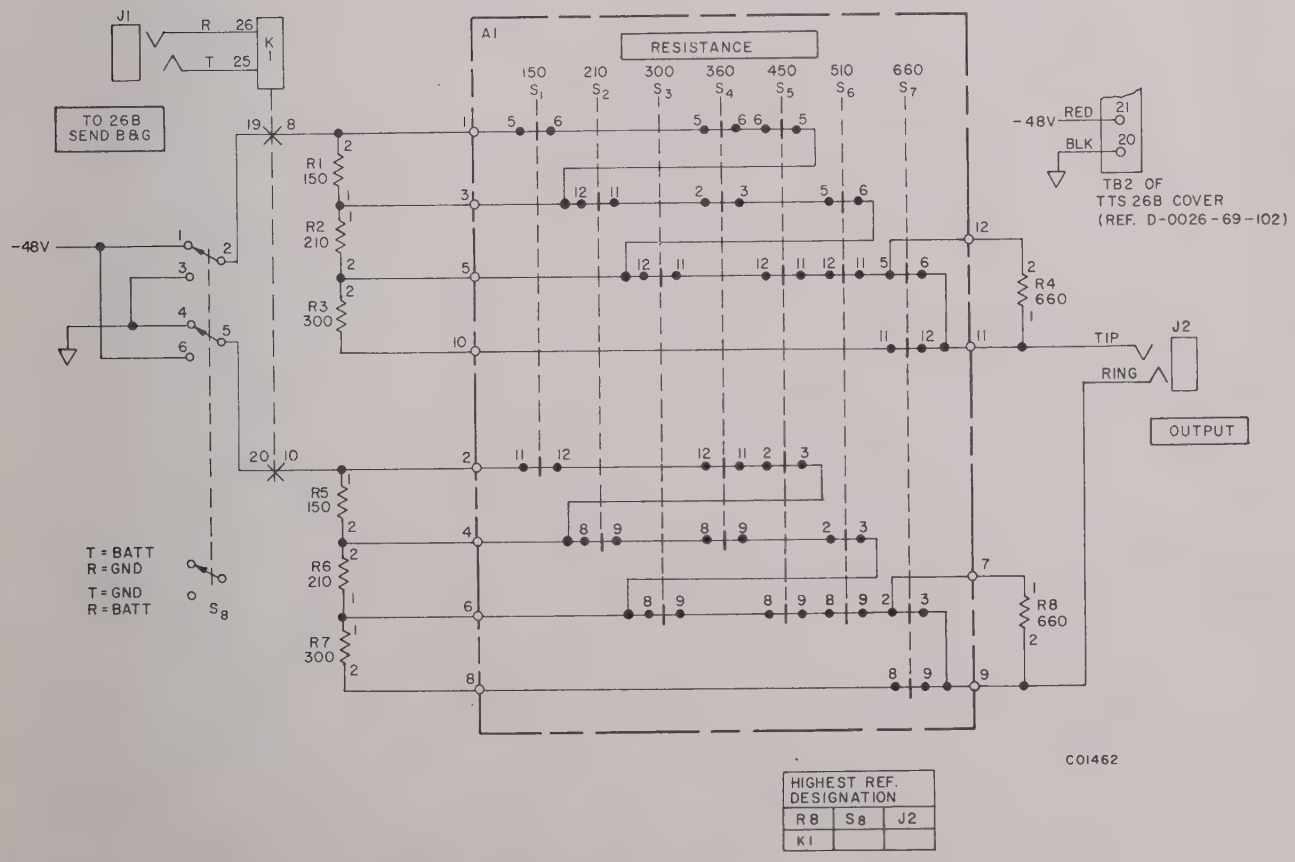


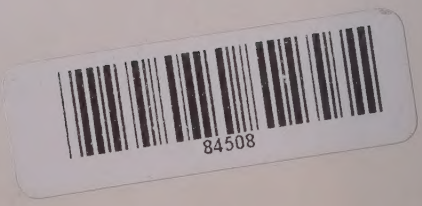
Figure 6. TTS 26BXA Battery and Ground Pulsing Adaptor Schematic Diagram.

Table 5. TTS 26BXA Battery and Ground Pulsing Adaptor Parts List.

REFERENCE DESIGNATOR	DESCRIPTION VALUE	POWER	TOL	VOLTS	MFGR.	MFGR. PART NO.	N.E. PART NO.
A1	PC BD 96816 SW BD ASSY						A002669012
J1-2	HI-D				SWCRFT	M-112B	650101300
K1	270-	80 MA			NORTHERN	NE-AF517	604105501
R1	150-	50W	1%		RCL	AL50-150	210601510
R2	210-	25W	1%		RCL	AL25-210	210602110
R3	300-	25W	1%		RCL	AL25-300	210603010
R4	660-	25W	1%		RCL	AL25-660	210606610
R5	150-	50W	1%		RCL	AL50-150	210601510
R6	210-	25W	1%		RCL	AL25-210	210602110
R7	300-	25W	1%		RCL	AL25-300	210603010
R8	660-	25W	1%		RCL	AL25-660	210606610
S8	DPDT	5A		28V	C+K COMP	7201P3YZB	620400600

Table 6. Switch Assembly A1 Parts List.

REFERENCE DESIGNATOR	DESCRIPTION VALUE	MFGR.	MFGR. PART NO.	N.E. PART NO.
S1-7	PB,7POS.INT LOKNG,4POLE	SCHADOW	7XFA15FS/BLACK4UGR	635701003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